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increased in size and became soft, slender, conical protuberances of bluish color, and about five eighths of an inch in length. These became the framework of a growth of a moss-like gill structure, that covered them completely. When these changes were complete, the "water-dog" had assumed the form familiar to the writer, and known to be the axolotl. This animal he had regarded as distinct from the "water-dog," and the apparent identity of the two animals impressed him greatly. Later he secured a publication concerning this, to him, amazing transformation; but the transformation therein described was of the reverse order, or from the axolotl form to that of the "water-dog." As the writer shortly after removed to the east, he had no opportunity of repeating the experiment, and finally dismissed the matter from his mind. If the facts here detailed have not been hitherto recorded, it would be interesting if some one would repeat this experiment, which is a too distant memory to be submitted as a scientific demonstration.

R. D. O. JOHNSON

NOTE ON THE LIFE HISTORIES OF THE FERN RUSTS
OF THE GENUS *UREDINOPSIS*

UNDER *Peridermium balsameum* Peck the writer¹ described experiments and observations which indicated that the fern rusts belonging to the genus *Uredinopsis* are heteroecious, having their æcial stage on *Abies balsamea* (L.) Mill. Artificial infection experiments carried on during the present season by the writer have established the conclusions there stated. These experiments have shown that *Uredinopsis Osmundæ* Magn., *U. Struthiopteridis* Störmer, *U. Phegopteridis* Arthur, *U. mirabilis* (Peck) Arthur, and *U. Atkinsonii* Magn. have their æcial stages on *Abies balsamea* (L.) Mill. The æcia are the white spored forms that have passed as *Peridermium balsameum* Peck. A detailed description of the experiments will be published soon.

W. P. FRASER

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¹ *Mycol.*, 4: 189, 1912.

"PAWLOW"

I NOTE with interest Professor Halsted's protest¹ against the spelling of Lobachevski's name with a "w," a sort of scientific Wellerism which Teutonic influence has foisted upon the English language. Is it too much to hope that some day we may find American physiologists referring to Pavloff instead of to Pawlow, or is it true that in such mixed crosses, as the heredity experts would say, German pedantry is prepotent over common sense?

J. F. ABBOTT

SCIENTIFIC BOOKS

Non-Euclidean Geometry. A critical and historical study of its development. By ROBERTO BONOLA. Translated by H. S. CARSLAW. Chicago, The Open Court Publishing Co. 1912.

To Dr. Paul Carus the world is greatly indebted for making this book accessible in the universal language, English.

There are two ways of envisaging the coming of non-euclidean geometry; either as a gradual development or as a saltation. The first attitude is taken in my article, "The non-euclidean geometry inevitable";¹ the second in the introductions to my translations of Lobachevski and Bolyai, where I say Lobachevski was the first man ever to publish a non-euclidean geometry, though Bolyai's marvel of genius went perfect to the printer in the same year, 1829, the most extraordinary two dozen pages in the whole history of thought.

Bonola's book takes the developmental viewpoint, and the first 83 pages give a just and adequate account of the forerunners of non-euclidean geometry, with whom belong Schweikart, Gauss and Taurinus, though far greatest of whom was Saccheri.

The inadequacy of the book is in the 30 pages, out of 268, devoted to the real founders of non-euclidean geometry, John Bolyai and Lobachevski, whose very names Carslaw has

¹ *SCIENCE*, May 10, 1912, p. 736.

¹ *Monist*, 4, 483-493.